



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,467	10/07/2005	Tetsujiro Kondo	278694US6PCT	2209
22850 7590 01/26/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER THIRUGANAM, GANDHI				
ART UNIT		PAPER NUMBER		
2624				
NOTIFICATION DATE		DELIVERY MODE		
01/26/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/552,467

Applicant(s)

KONDO ET AL.

Examiner

GANDHI THIRUGANAM

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/01/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

REMARKS

The response received on 25 November 2008 has been placed in the file and was considered by the examiner. An action on the merits follows.

Applicant has amended claims 1, 7, 8 and 14-16. Claim 17-20 has been added. No claims have been canceled. Claims 1-20 are pending.

Examiner withdraws the claim objections of claims 1, 8 and 15 in view of the pending amendment.

The Examiner withdraws the claim objection of claim 16.

The Examiner withdraws the objection to the Abstract.

The Examiner withdraws the USC 112 Rejections of claims 7 and 14.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 25 November 2008 has been entered.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim(s) **8** is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. The Examiner suggests using language similar to "using a central processing unit to perform the steps of:"...

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 15, 17-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 15 recites "A computer-readable memory including a program...", but does not define what is a computer readable memory, But does recite "a program stored in a read only memory (ROM) 62 or a storage section 63." In paragraph 0130 of the PGPUB 2006/0192857.

Claims 17-20 recites the limitation "combines the motion-blurring-mitigated object image into a space- time location in a subsequent image, for which the motion-blurring-mitigated object image is not generated, based on the motion vector detected by the motion vector detection means, to output it as a motion-blurring-mitigated image." Applicant pointed to paragraphs [0126-0129] for support of these claims.

The Examiner was unable to find support for these claims. While paragraph [0127] does state:

The output section 50 combines the foreground component image data DBf supplied from the motion blurring adjustment section 44 into the background component image data DBb supplied from the foreground/background separation section 43 in the motion-blurring-mitigated object image generation section 40, to generate image data DVout and output it. In this case, the foreground component image in which motion blurring is mitigated is combined into a space-time position that corresponds to the motion vector MVC detected by the motion vector detection

section 30. That is, combining the motion-blurring-mitigated foreground component image into a position indicated by the processing region information HZ that is set in accordance with the motion vector MVC allows the motion-blurring-mitigated foreground component image to output with it being properly set to an image position before the motion-blurring-mitigated image is generated.

While the Examiner does see combining the motion-blurring mitigated object (more precisely the Foreground Component Image) in a space-time position corresponding to a motion vector. The paragraphs [0126-129] do not show that it is combined with the subsequent image. While in general it is well known in the art that motion compensation uses motion information of the current frame and uses it in subsequent frames, paragraphs [0126-129] do not appear to show this. From Fig. 5 It appears that motion blurring mitigated object is combined with the current background image (See Fig. 5 DBb).

The Examiner can not find any mention of "for which the motion-blurring-mitigated object image is not generated". It also appears that the motion-blurring-mitigated object is always generated.

Fig. 5 gives clear support for "based on the motion vector detected by the motion vector detection means, to output it as a motion-blurring-mitigated image", therefore this portion of the claim appears to contain no new matter.

The Examiner requests applicant point to lines the paragraphs quoted to show support for the claims 17-20.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 7 and 14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7 and 14 recites "a class determination means". What is applicant's definition of a "class"? Are there two classes (one being the foreground and the other a background)?

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim s 1-5, 8-12 and 15-16 rejected under 35 U.S.C. 102(b) as being anticipated by Kondo et al. (PGPub #2004/0021775), hereafter referred to as Kondo.

Regarding **claim 1**, Kondo discloses an apparatus for processing an image, said apparatus comprising:

motion vector detection means (*Kondo, Fig. 2 #102, "Movement Detecting Unit"*) for detecting a motion vector about a moving object (*Kondo, Fig. 2 "Movement vector and Position information thereof"*.) that moves in multiple images, each of the multiple images is made up of multiple pixels and acquired by an image sensor having time integration effects, and tracking the moving object; (*Kondo, ¶[1251], "In the above, an example has been given of a case of projecting images in real space having three-dimensional space and time-axis information onto time-space having two-dimensional space and time-axis information, using a video camera"*)

motion-blurring-mitigated object image generation means for generating a motion-blurring-mitigated object image in which motion blurring occurred in the moving object in each image of the multiple images is mitigated by using the motion vector detected by the motion vector detection means; and (*Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit"*)

output means for combining the motion-blurring-mitigated object image that is generated in the motion-blurring-mitigated object image generation means into a space-time location in each image, based on the motion vector being detected by the motion vector detection means, to output it as a motion-blurring-mitigated image. (*Fig. 137, "Image Synthesizing Unit", where the "Background Component Image" and "Foreground Component Image" are combined, Where the Foreground is based a movement vector and position information (See Fig. 2)*)

Regarding **claim 2**, Kondo discloses the apparatus for processing the image according to claim 1,

wherein the motion vector detection means sets a target pixel corresponding to a location of the moving object in any one of at least a first image and a second image, which are sequential in terms of time, and detects a motion vector corresponding to the target pixel by using the first and second images; and (Kondo, ¶ [0011], *"movement vector for indicating relative movement between the pixel data of the frame of interest and the pixel data of the adjacent frame"*)

wherein the output means combines the motion-blurring- mitigated object image into a location of the target pixel in said one of the images or a location corresponding to the target pixel in the other image, said locations corresponding to the detected motion vector. (Kondo, ¶ [0012], *"output as first difference image data, and calculate difference based on the mixture ratio of the pixel of interest of the frame of interest between each pixel of the frame of interest of the image data and each pixel of a second adjacent frame adjacent to the frame of interest of the image data, and output as second difference image data"*)

Regarding **claim 3**, Kondo discloses the apparatus for processing the image according to claim 1,

wherein in a processing region of the image, the motion- blurring-mitigated object image generation means turns into a model so that a pixel value of each pixel in which no motion blurring corresponding to the moving object occur becomes a value obtained by integrating the pixel value in a time direction with the pixel being moved corresponding to the motion vector (Kondo, Fig.13, *where the pixels not changed in the time direction are set at the background region*) and

generates a motion-blurring-mitigated object image in which motion blurring of the moving object included in the processing region is mitigated, based on the pixel value of the pixel in the processing region. (*Kondo, Fig. 2, where the motion blurring is mitigated by the movement vector which is based on pixel value processing of the object*)

Regarding **claim 4**, Kondo discloses the apparatus for processing the image according to claim 3, wherein the motion-blurring-mitigated object image generation means includes:

region identification means for identifying a foreground region, a background region, and a mixed region in the processing region, said foreground region being composed of only a foreground object component constituting a foreground object which is moving object, said background region being composed of only a background object component constituting a background object, and said mixed region mixing the foreground object component and the background object component; (*Kondo, Fig. 6A and 6B shows the detection of the background, foreground and mixed regions.*)

mixture ratio detection means for detecting a mixture ratio of the foreground object component and the background object component in the mixed region; (*Kondo, Fig. 2 #104, and "Mixture Ratio Calculating Unit"*)

separation means for separating at least a part of region of the image into the foreground object and the background object, based on the mixture ratio; and (*Kondo, Fig. 2 #105, "Foreground/Background Separation Unit"*)

motion-blurring-adjusting means for mitigating motion blurring of the foreground object separated by the separation means based on the motion vector. (*Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit"*)

Regarding **claim 5**, Kondo discloses the apparatus for processing the image according to claim 3,

wherein the motion vector detection means detects the motion vector every pixel in the image; and (*Kondo, ¶[0018], "generating movement vector information indicating each of the generated movement vectors; wherein, in the weighted difference image data calculating step, the weighted difference is calculated based on the weighting indicated by the weighting information between each pixel of the frame of interest of the image data and each pixel of the adjacent frame adjacent to the frame of interest of the image data," where the motion vector is generated for each pixel*)

wherein the motion-blurring-mitigated object image generation means sets the processing region according to the motion vector of the target pixel in the image so that the processing region includes the target pixel, and outputs pixel value in which motion blurring of the target pixel is mitigated in pixel units based on the motion vector of the target pixel. (*Kondo, Fig. 2, where the "Movement Blurring Adjustment Unit" takes in the movement vector and outputs the foreground component with the movement blurring being mitigated.*)

Regarding **claim 8**, Kondo discloses a method for processing an image, said method comprising:

motion-vector-detecting step (*Kondo, Fig. 2 #102, "Movement Detecting Unit"*) of detecting a motion vector about a moving object that moves in multiple images, each of the multiple images being made up of multiple pixels and acquired by an image sensor having time integration effects, and tracking the moving object; (*Kondo, Fig. 2 "Movement vector and Position information thereof."*) (*Kondo, ¶1251, "In the above, an example has been given of a case of projecting images in real space having three-dimensional space and time-axis information onto time-space having two-dimensional space and time-axis information, using a video camera"*)

motion-blurring-mitigated-object-image-generating step of generating a motion-blurring-mitigated object image in which motion blurring occurred in the moving object in each image of the multiple images is mitigated by using the motion vector detected in the motion-vector-detecting step; and (*Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit"*)

output step of combining the motion-blurring-mitigated object image that is generated in the motion-blurring-mitigated-object-image-generating step into a space-time location in each image, based on the motion vector detected in the motion-vector-detecting step, to output it as a motion-blurring-mitigated image. (*Fig. 137, "Image Synthesizing Unit", where the "Background Component Image" and "Foreground Component Image" are combined, Where the Foreground is based a movement vector and position information (See Fig. 2)*)

Regarding **claim 9**, Kondo discloses the method for processing the image according to claim 8, wherein the motion-vector-detecting step sets a target pixel

corresponding to a location of the moving object in any one of at least a first image and a second image, which are sequential in terms of time, and detects a motion vector corresponding to the target pixel by using the first and second images; and (Kondo, ¶[0011], “movement vector for indicating relative movement between the pixel data of the frame of interest and the pixel data of the adjacent frame”)

wherein the output step combines the motion-blurring-mitigated object image into a location of the target pixel in said one of the images or a location corresponding to the target pixel in the other image, said locations corresponding to the detected motion vector. (Kondo, ¶[0012], “output as first difference image data, and calculate difference based on the mixture ratio of the pixel of interest of the frame of interest between each pixel of the frame of interest of the image data and each pixel of a second adjacent frame adjacent to the frame of interest of the image data, and output as second difference image data”)

Regarding **claim 10**, Kondo discloses the method for processing the image according to claim 8, wherein in a processing region of the image, the motion-blurring-mitigated-object-image-generating step turns into a model so that a pixel value of each pixel in which no motion blurring corresponding to the moving object occur becomes a value obtained by integrating the pixel value in a time direction with the pixel being moved corresponding to the motion vector and (Kondo, Fig.13, where the pixels not changed in the time direction are set at the background region)

generates a motion-blurring-mitigated object image in which motion blurring of the moving object included in the processing region is mitigated, based on the pixel

value of the pixel in the processing region. . (*Kondo, Fig. 2, where the motion blurring is mitigated by the movement vector which is based on pixel value processing of the object*)

Regarding **claim 11**, Kondo discloses the method for processing the image according to claim 10, wherein the motion-blurring-mitigated-object-image-generating step includes:

region identification step of identifying a foreground region, a background region, and a mixed region in the processing region, said foreground region being composed of only a foreground object component constituting a foreground object which is moving object, said background region being composed of only a background object component constituting a background object, and said mixed region mixing the foreground object component and the background object component; (*Kondo, Fig. 6A and 6B shows the detection of the background, foreground and mixed regions.*)

mixture-ratio-detecting step of detecting a mixture ratio of the foreground object component and the background object component in the mixed region; (*Kondo, Fig. 2 #104, "Mixture Ratio Calculating Unit"*)

separation step of separating at least a part of region of the image into the foreground object and the background object, based on the mixture ratio; and (*Kondo, Fig. 2 #105, "Foreground/Background Separation Unit"*)

motion-blurring-adjusting step of mitigating motion blurring of the foreground object separated in the separation step based on the motion vector. (*Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit"*)

Regarding **claim 12**, Kondo discloses the method for processing the image according to claim 10, wherein the motion-vector-detecting step detects the motion vector every pixel in the image; and (Kondo, ¶[0018], *“generating movement vector information indicating each of the generated movement vectors; wherein, in the weighted difference image data calculating step, the weighted difference is calculated based on the weighting indicated by the weighting information between each pixel of the frame of interest of the image data and each pixel of the adjacent frame adjacent to the frame of interest of the image data,”* where the motion vector is generated for each pixel)

wherein the motion-blurring-mitigated-object-image- generating step sets the processing region according to the motion vector of the target pixel in the image so that the processing region includes the target pixel, and outputs pixel value in which motion blurring of the target pixel is mitigated in pixel units based on the motion vector of the target pixel. (Kondo, Fig. 2, where the *“Movement Blurring Adjustment Unit”* takes in the movement vector and outputs the foreground component with the movement blurring being mitigated.)

Regarding **claim 15**, Kondo discloses a computer-readable memory including a program for allowing a computer to perform a method for processing an image comprising:

detecting a motion vector about a moving object that moves in multiple images, each of the multiple images being is made up of multiple pixels and acquired by an image sensor having time integration effects, and tracking the moving object; (Kondo,

Fig. 2 #102, "Movement Detecting Unit") (Kondo, Fig. 2 "Movement vector and Position information thereof".) (Kondo, ¶[1251], "In the above, an example has been given of a case of projecting images in real space having three-dimensional space and time-axis information onto time-space having two-dimensional space and time-axis information, using a video camera")

generating a motion-blurring-mitigated object image in which motion blurring occurred in the moving object in each image of the multiple images is mitigated by using the motion vector; and (Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit")

combining the motion-blurring-mitigated object into a space-time location in each image, based on the detected motion vector, to output it as a motion-blurring-mitigated image. (Fig. 137, "Image Synthesizing Unit", where the "Background Component Image" and "Foreground Component Image" are combined, Where the Foreground is based a movement vector and position information (See Fig. 2))

Regarding **claim 16**, Kondo discloses an apparatus for processing an image, said apparatus comprising (Claim 16 uses the phrase "configured to". Even though the Examiner is addressing the limitations after the phrase "configured to"):

a detector (Kondo, Fig. 2 #102, "Movement Detecting Unit") configured to detect a motion vector about a moving object (Kondo, Fig. 2 "Movement vector and Position information thereof".) that moves in multiple images, each of the multiple images being made up of multiple pixels and acquired by an image sensor having time integration effects, and configured to track the moving object; (Kondo, ¶[1251], "In the above, an example has been given of a case of projecting images in real space having three-

dimensional space and time-axis information onto time-space having two-dimensional space and time-axis information, using a video camera")

a processor configured to generate a motion-blurring-mitigated object image in which motion blurring occurred in the moving object in each image of the multiple images is mitigated by using the motion vector; and (*Kondo, Fig. 2 #106, "Movement Blurring Adjustment Unit"*)

an output section configured to combine the motion-blurring-mitigated object image into a space-time location in each image based on the motion vector detected at the detector, to output it as a motion-blurring-mitigated image. (*Fig. 137, "Image Synthesizing Unit", where the "Background Component Image" and "Foreground Component Image" are combined, Where the Foreground is based a movement vector and position information (See Fig. 2)*)

Regarding **claim 17**, Kondo discloses the apparatus for processing the image according to claim 1, wherein the output means combines the motion-blurring-mitigated object image into a space- time location in a subsequent image, for which the motion-blurring-mitigated object image is not generated, based on the motion vector detected by the motion vector detection means, to output it as a motion-blurring-mitigated image. (*Kondo, ¶[1194-1200]*)

Regarding **claim 18**, Kondo discloses the method for processing the image according to claim 8, wherein the output step combines the generated motion-blurring-mitigated object image into a space-time location in a subsequent image, for which the motion-blurring-mitigated object image is not generated, based on the motion vector

detected in the motion-vector-detecting step, to output it as a motion-blurring-mitigated image. (*Kondo*, ¶[1194-1200])

Regarding **claim 19**, Kondo discloses the computer-readable memory according to claim 15, further comprising:

combining the motion-blurring-mitigated object image into a space-time location in a subsequent image, for which the motion-blurring-mitigated object image is not generated, based on the detected motion vector to output it as a motion-blurring-mitigated image. (*Kondo*, ¶[1194-1200])

Regarding **claim 20**, Kondo discloses the apparatus for processing an image according to Claim 16, wherein the output section is configured to combine the motion-blurring-mitigated object image into a space-time location in a subsequent image, for which the motion-blurring-mitigated object image is not generated, based on the motion vector detected at the detector, to output it as a motion-blurring-mitigated image (*Kondo*, ¶[1194-1200])

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Wang et. Al (Patent #5,557,684), hereafter referred to as Wang.

Regarding **claim 6**, Kondo discloses the apparatus for processing the image according to claim 1,

But does not specifically disclose "further comprising expanded image generation means for generating an expanded image based on the motion-blurring-mitigated image, wherein the output means outputs the expanded image to a location corresponding to the motion vector in a time direction." (*Wang, Fig. 1 shows the mpeg sequence "Flower Garden" where layers are segmented. These regions can have affine transformations completed on them such as "zooming" (Wang, Col. 4 Lines 58-67), where zooming and expanding are defined to be the same thing.*)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo with Wang for the purpose of identifying motion objects and enlarging them for further clarity.

Regarding **claim 13**, Kondo discloses the method for processing the image according to claim 8,

But does not specifically disclose "further comprising expanded-image-generating step of generating an expanded image based on the motion-blurring-mitigated image, wherein in the output step, the expanded image is output to a location corresponding to the motion vector in a time direction." (*Wang, Fig. 1 shows the mpeg sequence "Flower Garden" where layers are segmented. These regions can have affine transformations completed on them such as "zooming" (Wang, Col. 4 Lines 58-67), where zooming and expanding are defined to be the same thing.*)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo with Wang for the purpose of identifying motion objects and enlarging them for further clarity.

11. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo in view of Wang in further view of Kondo et al (Patent # 5,940,539), hereafter referred to as Kondo2.

Regarding **claim 7** as best understood, Kondo in view of Wang discloses the apparatus for processing the image according to claim 6,

But does not disclose "wherein the expanded image generation means includes: class determination means (*Kondo2, Col. 4 Lines 28-29 (Fig. 6 #S3, "Determine Class")* for extracting multiple pixels corresponding to a target pixel in the expanded image from the motion-blurring-mitigated image and determining a class corresponding to the target pixel based on a pixel value of the extracted multiple pixels; (*Kondo2, Col. 6 Lines 45-55, "Predictive taps are formed from nine near pixels x0 to x8..."*)

storage means for storing predictive coefficients each for predicting a target pixel from multiple pixels in a first image, said multiple pixels corresponding to a target pixel in a second image, said predictive coefficients being obtained by learning between the first and second images every class, said first image having number of pixels corresponding to the motion-blurring-mitigated image, and said second image having number of pixels more than that of the first image; and (*Kondo2, Col. 4 Lines 30-31*)

predictive value generation means for detecting the predictive coefficients each corresponding to the class detected by the class detection means from the storage means, extracting the multiple pixels corresponding to the target pixel in the expanded image as a predictive tap from the motion-blurring-mitigated image, and generating a predictive value corresponding to the target pixel according to one-dimensional linear combination of the predictive coefficients detected from the storage means and the predictive tap. (*Kondo2, Col. 4 Lines 32-37*)"

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo and Wang with Kondo2 for the purpose of predicting a pixel position by a class sort adaptive process.

Regarding **claim 14** as best understood, Kondo in view of Wang discloses the method for processing the image according to claim 13,

But does not disclose "wherein the expanded-image-generating step includes: class-determining step of extracting multiple pixels (*Kondo2, Col. 4 Lines 28-29*) (*Fig. 6 #S3, "Determine Class"*) corresponding to a target pixel in the expanded image from the motion-blurring-mitigated image and determining a class corresponding to the target pixel based on a pixel value of the extracted multiple pixels; (*Kondo2, Col. 6 Lines 45-55, "Predictive taps are formed from nine near pixels x₀ to x₈..."*)

storing step of storing predictive coefficients each for predicting a target pixel from multiple pixels in a first image, said multiple pixels corresponding to a target pixel in a second image, said predictive coefficients being obtained by learning between the first and second images every class, said first image having number of pixels

corresponding to the motion-blurring-mitigated image, and said second image having number of pixels more than that of the first image; and (*Kondo2, Lines 30-31*)

predictive-value-generating step of detecting, in the storing step, the predictive coefficients each corresponding to the class detected in the class-detecting step, extracting the multiple pixels corresponding to the target pixel in the expanded image as a predictive tap from the motion-blurring-mitigated image, and generating a predictive value corresponding to the target pixel according to one-dimensional linear combination of the predictive coefficients detected in the storing step and the predictive tap" (*Kondo2, Lines 32-37*)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Kondo and Wang with Kondo2 for the purpose of predicting a pixel position by a class sort adaptive process.

Response to Arguments

12. Applicant's arguments filed 25 November 2008 have been fully considered but they are not persuasive.

On page 14 paragraph 2, applicant states that "Kondo '775 fails to disclose using a motion vector corresponding to the object to determine where the mitigated object image is to place in a space time location in each image, as recited in amended independent Claim 1." Fig. 2 of Kondo '775 shows that a Position Information is also generated and sent to the "movement blurring adjustment unit".

On page 15 paragraph 3, applicant states "however, the signal processing device of Fig. 2 merely detects, corrects, and outputs the foreground component images. The signal processing device in Fig. 2, therefore, does not output a motion vector corresponding to the foreground component image" The Examiner would like to point out in Figure 2, the output of #102 says "Movement Vector and Position Information thereof", where the input of #102 is object from the input image. The Examiner contends that a "movement vector" is equivalent to a "motion vector"

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GANDHI THIRUGNANAM whose telephone number is (571)270-3261. The examiner can normally be reached on M-Th, 7:30am to 6pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gandhi Thirugnanam/
Examiner, Art Unit 2624

/Samir A. Ahmed/
Supervisory Patent Examiner, Art Unit 2624